

## ABSTRACT OF THE DISCLOSURE

Disclosed herein is a technique for forming a high quality ohmic contact utilizable in the fabrication of short-wavelength light emitting diodes (LEDs) emitting blue and green visible light and ultraviolet light, and laser diodes (LDs) using a gallium nitride (GaN) semiconductor.

The ohmic contact is formed by depositing a nickel (Ni)-based solid solution on top of a p-type gallium nitride semiconductor. The ohmic contact thus formed has an excellent current-voltage characteristic and a low specific contact resistance due to an increased effective carrier concentration around the surface of the gallium nitride layer, as well as a high transmittance in the short-wavelength region.